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AVIATION AND AIRCRAFT JOURNAL

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The Air Service Reserve

THERE has been much criticism of the Air Service Reserve from officers who have received commissions and who hoped that they might have an opportunity to continue their flying as so to be in training in case of their being ordered to active duty.

It appears, however, that little has been done in this direction by the Air Service because of general problems which must be settled before the War Department can give the reserve proper consideration. The Air Service like other branches of the Army has had to wait until the question of the National Guard and its future status is settled by Congress. As the all important matter of funds is involved little can be accomplished until the whole comprehensive plan is worked out and a decision reached.

What is needed are airplanes conveniently located where airplanes of all types are available for flying, with a small force of Air Service mechanics to keep the ships in good order. If even this opportunity were available the flying skill of reserve pilots would not be entirely lost.

The Mechanical Evolution of the Airplane

IT is extremely interesting to watch the mechanical evolution of the airplane. In the early stages of its development so much difficulty was experienced in securing the necessary elements of structural strength for a purely static structure such as the wings—static in a structural sense, even though dependent on dynamic reaction for their sustenance—that a school of designers was formed which regarded military static strength as a great achievement, and the inclusion of any moving parts as fraught with a danger and difficulty. The designer sought to avoid the weakness of all mechanical devices on the airplane.

Within the last two or three years we have seen the employment of a retractable chassis, of empennage gears, of movable ailerons for the airplane proper, and systems of gearing for the propeller itself. These innovations have not been achieved at any expense of life or great destruction of the planes. Thus and other devices produce a greatly increased performance and a greater sphere of usefulness for the airplane. The mechanical evolution is justified, and there is a probability of the rapid continuation of this evolution.

The Future of the Club

THE future of the Aero Club of America is a matter of great importance to everyone interested in the development of American aviation. The club this year appears to have come to a point where a difference of opinion among the members may have a serious effect on matters of greater moment.

There seems to have been expressed by as many different groups. The present policy seems to be to continue the club as a national organization with greater representation from the country at large and no adequate club houses. Others in the club express the belief that the club house should be

more of a local affair and the government of the club be entrusted to men who can give personal attention to the management of the organization. Another group feels that at present, an adequate club house is impossible to maintain owing to the high price and expense of securing a permanent with a limited percentage, and would have the club secure comfortable offices and limit the expenditures to the probable revenue. This group, too, believes in expanding the membership by lower dues, 1000 an association which will have members from every locality in the United States.

The new Board of Governors and the new officers are clearly the situation by issuing a statement of their plans at an early date.

The Areas with Streamline Features

UNDOUBTEDLY one of the most important features to be reduced in an airplane, is what we may call directional stability. This may be briefly, and perhaps loosely defined as the ability of an airplane to head into a side wind. A directionally unstable airplane tends to head away from the side wind, and therefore is yaw dangerously off its course. Stability of the element is easily secured by placing sufficient fin area on the rear of the machine. The amount of such fin area is determined from empirical considerations.

To Capt. J. B. Patterson of McCook Field is due the credit of recommending particular care in using large fin area, where a better feature is well streamlined. The streamlining of a fuselage improves performance materially, but at the same time reduces the fuselage much more directionally unstable, than is the case of a fuselage with a large fin area on its rear portion. Where fin area has been organically proportioned without due consideration of the streamlined fuselage serious directional instability may result, and this has indeed been the case in one or two recent designs.

New Airplane Design

IT will probably take another war to bring to the attention of the public the real progress that is being made throughout the world in the design of airplanes. It can be said, without any words being diminished, that if the public knew the internal activity of the designers of military and naval aircraft in all countries, it would be amazing news.

Just how far such information will be given to the public is a matter for the intelligence departments to determine but when new types of machines are loudly discussed at the time they are reported, and are made in factories where there is little or no attempt at secrecy, it seems unfortunate that more news is not available regarding development work.

Recently several new types of military airplanes have been under discussion and many are under construction. What real satisfaction it would give the public to know that the appropriations for armaments were producing something which may be the country's first line of defense in a future war.

The New Variable Surface Airplane

By H. M. Rockswold, M.E.

A recent French development, the Levavasseur and Gastambide variable surface airplane is a tractor biplane fitted with a 250 hp Hispano engine. The novel feature of this design enables the pilot to vary the surface, while in flight, from 345 sq. ft. to 560 sq. ft. at a ratio of 3 to 5.

The area of the section wing is fixed, the upper wing alone being adjustable. The latter is composed of three parts, two

French aeronautical engineers who designed the Antelope monoplane of 1929, on which the first attempt to cover the English Channel was made. The present variable surface machine was built under the supervision of Mr. Latham, a cousin of the celebrated early pilot, Henriett Latham.

Two large types of this airplane have been constructed. No. 1 has a large round fuselage, and is well streamlined.

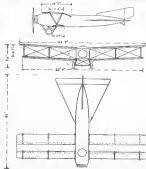


THE LEVAVASSEUR AND GASTAMBIDE VARIABLE SURFACE AIRPLANE WITH WINGS OPEN. (CHINESE 10 FT. 9 IN.)

of which are sliding. The middle section remains fixed, the lower can slide forward, while the upper one slides backward. The chord then varies from 5 ft. 3 in. to 10 ft. 3 in. The front panel, which is flat, displaces horizontally, while the rear portion which is curved, moves backward and downward. Thus the number varies and also the angle of incidence. When fully open, the leading edge is 12 in. below the leading edge, and the angle of incidence has passed from 5 deg. to 15 deg.

The great difficulty in the design of a variable surface airplane is to keep the center of pressure stationary, irrespective of the surface, any displacement of the center of pressure causing longitudinal instability. In this machine, the rear chord gives simultaneously the same amount, on front and rear. The motion of the trailing edge is along a circular arc, and the wing is so designed that at all developments of surface, the center of pressure remains constant, or at least practically so.

Levavasseur and Gastambide the designers are two engineers



DESIGNERS AND PLAN OF LEVAVASSEUR AND GASTAMBIDE VARIABLE SURFACE AIRPLANE

The mechanism for moving the surface is a system of rigid links. No. 2 which forms the subject matter of this article has an ordinary rectangular linkage and is easily constructed throughout. It is strong, has been made a strengthening, the idea being to produce a machine that would be rigid and strong, and well capable of passing government tests for both strength and performance. The change of shape of No. 2 is made by means of cables.

Successful flights have been made at Etampes, France, machine No. 1 having been flown about fifteen times. The pilot, Mr. Grandjean, states that the maneuverability is excellent. Public flights have recently been made before aeronautical experts and government authorities. For persons among the thousands who were at Etampes on September 28, for the Gordon Bennett race, and who admired the variable surface feature of the machine. Wright says, last day in a language at one side of the field, was an airplane that not only had variable control, but variable surface and variable air-driven. This machine is

is thought will secure the 100,000 franc prize offered by the Union for the Safety of Airplanes, on account of its high speed and low landing speed.

The present machine is a result of three years of study and design. Tested with a sand load, in accordance with the method prescribed by the Technical Section of French Association by which the airplane will be bought for the French Army, it showed a factor of safety of six, with wings fully open.

Indeed, there is connected a cord which is fitted to a pulley and receiving down, so that when the flap is open, one can see the setting of the chord at which the take-off, the full speed, the maximum speed, etc., were made.

The Wing Cell

There is no other section. The upper and lower wings are not at a 5 deg. distance, and are in two sections, which are attached to the fuselage. The wing frame-work is of wood, as are the main sections as well as the sliding panels. The



THE LEVAVASSEUR AND GASTAMBIDE VARIABLE SURFACE AIRPLANE WITH WINGS CLOSED. (CHINESE 5 FT. 2 IN.)

Varying the Surface

To vary the surface, the pilot just turns a wheel, at his side. The surfaces, equipped with metal cables which are in metal grooves, slide in or out. The whole operation of either increasing or decreasing the surface takes about three minutes.

The accompanying diagram shows the principle. At the pilot's right side is found the vertical wheel which transmits the rotation to the right longitudinal shaft, by means of a bevel gear. The two longitudinal shafts are connected by a chain. At the rear end of each shaft, there is a phosphor-bronze drum on which the cables wind and unwind. The diagram shows a simple arrangement of the mechanism, from three auxiliary parts which would make it more difficult to understand. In reality, two cables wind and two cables unwind on each drum, instead of one, as shown. Also two auxiliary control cables connect the right and left wings at the leading edge. It will explain to the reader why the machine can be made.

according to chord. The upper wing has three broad spans 15 in. wide by 3 in. high, running through the vertical chord. The lower wing has only one span which is of the broad type 3 in. x 3 in. The two wings are operated on each side by two pairs of metal shafts set at a V. The interior would have a fixed

off by about 10 in. L, giving the whole the exterior form in shown in the photo. The leading cable is of the flat swaged type. The wings are well braced. In addition to the ordinary interwing wires, there are bracing wires from two points of the fuselage, one at the nose and the other from a point half way between the nose and the tail. There is also a wire from the leading gear to a point on the lower wing at the first strut station. The screws are, of course, only on the bottom wings.

When the wings are fully retracted, there is the present minimum of the machine supports in a bearing the panels, which extend 7 ft. 6 in. to 2 ft. 6 in. in two pairs in front, and two in rear of each wing, situated at the panel in. The panels slide on these arms. On each side of the arms is a semi-circular metal groove, into

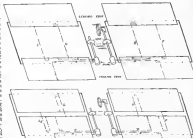


DIAGRAM ILLUSTRATING HOW WING SURFACE IS CHANGED ON THE LEVAVASSEUR AND GASTAMBIDE VARIABLE SURFACE AIRPLANE

In the upper diagram, the wings are shown open. To show the whole cable at 2 ft. 6 in. and the four panels move toward the leading edge and in a short time the lower wing is at 5 ft. 2 in. The lower diagram shows the wings closed. The upper wing cables A and B are pulled. The rear panels slide back and rear from front panels to move forward by means of cables C and D. All panels are moved in the second position of the wing.

which fit substantial rollers, the latter being attached to the fuselage. In the case of the leading edge surface during flight, the pressure against the aileron, which now serves as a flap, is in the case of the trailing edge surface, it appears that the only reason for the expansion of the rollers in the groove. The top side of the bottom wing is probably not out of a mold. This is also the case with the upper wing when closed. The bottom side is, in both cases, flat.

The Fuselage

The fuselage is of the ordinary biplane order variety, and is very large. It occupies the entire gap. The pilot's post is rather high, his back being on a level with the top surface. His visibility is good.

The Tail

The tail is exceptionally large, all of the surfaces having large dimensions. No doubt this was done purposely for stability at slow speed, the wing ailerons are also rather large. The tail parts are made of wood, and covered with cloth. The stabilizer is a plain surface and is obviously non-supporting. However its incidence can be adjusted on the ground. The rudder is entirely above the center line of the fuselage, and the elevator is fixed in one piece.

The tail sits in of extreme danger. No metal is used, and there is no shock absorber. The sled is built up of a half spruce of four planks of wood, each about 3 1/2 in. thick. The whole arrangement is readily fixed to the fuselage, there being no hinges of any sort. This sled is used to be rotated and damped. Perhaps the low landing speed accounts partly for its simplicity.

The Landing Gear

In general, the landing gear resembles the Breguet. There are three wooden struts on each side, separated at the bottom by two spaced links, between which runs the axle. The axle is not streamlined. The shock absorber is of ordinary design. The whole chassis is strongly braced with eight wires. For a machine whose landing speed is so low, it seems as if it would have been designed with one-half of its present weight.

The Power Plant

The Salmson 226 hp. engine is similar to that which is giving excellent results on the Farman Gulfair passenger plane, and is by far the best of the Farman-Breault type. There is a starting magneto in the cockpit.

The propeller is an "Integrator" and revolves non-shockwise when viewed from the pilot's seat.

Characteristics

Dimensions

Span, upper wing	42 ft. 6 in.
Span, lower wing	42 ft. 6 in.
Chord, upper wing	20 ft. 0 in.
Chord, lower wing	20 ft. 0 in.
Chord, upper wing (max.)	20 ft. 0 in.
Chord, lower wing (max.)	20 ft. 0 in.
Height	20 ft. 0 in.
Wing of fuselage (max.)	20 ft. 0 in.

Area

Upper wing (sq. ft.)	810 sq. ft.
Lower wing (sq. ft.)	810 sq. ft.
Wing of fuselage (sq. ft.)	810 sq. ft.
Total surface (sq. ft.)	1,620 sq. ft.
Area of fuselage (sq. ft.)	420 sq. ft.
Area of aileron (sq. ft.)	420 sq. ft.
Area of rudder (sq. ft.)	420 sq. ft.
Area of elevator (sq. ft.)	420 sq. ft.

Weights

Weight empty	2,210 lb.
Weight, fuel and oil	770 lb.
Weight of fuselage and oil	770 lb.
Weight of fuselage and oil	770 lb.
Weight of fuselage and oil	770 lb.
Weight of fuselage and oil	770 lb.
Weight of fuselage and oil	770 lb.
Weight of fuselage and oil	770 lb.

Associated Data

Engine (hp.)	226
Engine (hp.)	226
Engine (hp.)	226
Engine (hp.)	226
Engine (hp.)	226
Engine (hp.)	226
Engine (hp.)	226
Engine (hp.)	226

Performance	426 hp. Salmson
Maximum speed, level flight	110 mph.
Maximum speed, climb	110 mph.
Climb, 10,000 ft.	110 mph.
Climb, 20,000 ft.	110 mph.
Climb, 30,000 ft.	110 mph.
Climb, 40,000 ft.	110 mph.
Climb, 50,000 ft.	110 mph.
Climb, 60,000 ft.	110 mph.
Climb, 70,000 ft.	110 mph.
Climb, 80,000 ft.	110 mph.
Climb, 90,000 ft.	110 mph.
Climb, 100,000 ft.	110 mph.

U. S. Navy Airship D-2 Accepted

The Naval Airship D-2 left Akron, Ohio, at 2:30 a. m. Sunday, October 22, and landed at Langley Field, Va., at 12:45 P. M. the same day. The airship passed over Washington, D. C. about 8 o'clock. Its Commanding Officer was Lt. Col. R. C. Darr, U. S. Naval Reserve Force, who has been in charge of



THE D-2, THE LARGEST AMERICAN RIGID AIRSHIP

its trials. The other members of the crew were: Ensign (Lt.) J. T. Sewell, U. S. Naval Reserve Force, Chief Mechanic; Ensign Robert Farnum, U. S. Navy, and Chief Quartermaster J. P. Glavin, U. S. Navy. Lt. McIntyre, A. S. A., was a passenger. The airship is the largest built in the United States. Its gross capacity is 150,000 cubic feet; length 190 ft.; height 35 ft.; diameter 42 ft.; cruising radius, 750 miles. The design and construction were prepared by the Bureau of Construction and Repair of the Navy, and the air was manufactured at the Naval Aircraft Factory, Philadelphia, Pa. The airship was built by the Goodyear Tire and Rubber Company, and the ship was tested at its Goodyear test house near Akron. The Navy test crew have been conducting the trials of this airship at Akron, Ohio, and the successful flight from Akron to Langley Field was capped off as an achievement flight in non-traffic with the trials.

The Navy will turn this ship over to the Army Air Service for its use, as was done in the case of the Navy's "Zeppelin" airship built in France during the war for use at the Naval Air Station on the French Coast—the airship, which has recently made several flights from Langley Field to Washington.

The abandonment of most Naval Air Stations in the United States will be greatly retarded in the event of the Navy's acquisition of this world's largest airship, which is now being built in France. The Navy's acquisition of this airship will be greatly retarded in the event of the Navy's acquisition of this airship, which is now being built in France. The Navy's acquisition of this airship will be greatly retarded in the event of the Navy's acquisition of this airship, which is now being built in France.

Flying Pay Decision

An offer of the Air Service is now being made to receive flying pay for six days when on working tour and about four per cent. The Commission has held that a Navy officer on temporary duty and receiving flying pay is not entitled to flying pay, when the language of the statute is less restrictive than the statute applicable to the Army. The opinion of the J. A. D.'s office of April 8, 1939, is overruled.

Forty-Four Entries for Pulitzer Trophy Race

A field of forty-four starters for the Pulitzer Trophy race at Mitchell Field, New York, Thanksgiving Day, is shown by the list of entries made public by the Army Post Office. With few exceptions they are all Army, Navy and Marine Corps men.

Two SVAs have been entered by the Aero Import Co., one

SVA by the Eagle Flying Corp. and Marine Scout Co. Six entered out of those placed in addition to the Army, Navy and Marine Corps. England, Italy and Germany are all represented by their leading planes all of which with two privately owned exceptions having either been constructed or imported in America.

List of Entrants Pulitzer Trophy Contest

APPLICANT	Service	FLIGHT I	FLIGHT II	REMARKS
Thomas, Marine (Am.)	Weight 300 lb.	(Am.)	Capt. H. E. Hartney	U. S. Army
Pickler (Gry.)	Weight 300 lb.	(Am.)	Major G. H. Wade	U. S. Army
Thomas, Marine (Am.)	Weight 300 lb.	(Am.)	2nd Lieut. Lash Wade	U. S. Army
Orin, Marine (Am.)	Weight 300 lb.	(Am.)	2nd Lieut. O. G. Kelly	U. S. Army
Orin, Marine (Am.)	Weight 300 lb.	(Am.)	Capt. Maxwell Kirby	U. S. Army
Superville, Marine (Fr.)	Weight 300 lb.	(Am.)	1st Lieut. H. W. Steyer	U. S. Army
Leaning Dolphin (Fr.)	Weight 300 lb.	(Am.)	Lieut. C. R. Hays	U. S. Army
Flight B				
De Havilland (Am.)	Liberty 400 hp.	(Am.)	2nd Lieut. Carl Ellison	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	2nd Lieut. J. B. Wright	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Lieut. J. V. French	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	2nd Lieut. Ray W. Egan	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Lieut. Walter R. Lawson	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Capt. H. B. Mann	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Major Devereux Johnson	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Capt. Naughton	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	2nd Lieut. Morris D. Mann	U. S. Army
Flight C				
De Havilland (Am.)	Liberty 400 hp.	(Am.)	2nd Lieut. Louis F. Hays	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	2nd Lieut. Lawrence Claude	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Lieut. John P. Rosdell	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Lieut. H. C. Moffat	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Lieut. F. O. Rogers	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Capt. Naughton	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Lieut. (jg) D. L. Conly	U. S. Army
De Havilland (Am.)	Liberty 400 hp.	(Am.)	Lieut. Charles M. Cummings	U. S. Army
Flight D				
Vought V-5E-7 (Am.)	Weight 180 lb.	(Am.)	Lieut. (jg) W. S. Gwyn	U. S. Navy
Vought V-5E-7 (Am.)	Weight 180 lb.	(Am.)	Lieut. (jg) A. Larentis	U. S. Navy
Vought V-5E-7 (Am.)	Weight 180 lb.	(Am.)	2nd Lieut. J. H. Henderson	U. S. Navy
Vought V-5E-7 (Am.)	Weight 180 lb.	(Am.)	2nd Lieut. W. V. Egan	U. S. Navy
Vought V-5E-7 (Am.)	Weight 180 lb.	(Am.)	Oy. Ret. J. C. Stone	U. S. Navy
Vought V-5E-7 (Am.)	Weight 180 lb.	(Am.)	Ensign W. J. Eddy	U. S. Navy
Flight E				
S.E.-8 (Fr.)	Weight 180 lb.	(Am.)	Lieut. Leitha A. Smith	U. S. Army
S.E.-8 (Fr.)	Weight 180 lb.	(Am.)	2nd Lieut. B. M. Arnes	U. S. Army
S.E.-8 (Fr.)	Weight 180 lb.	(Am.)	Capt. Felix Rasmussen	U. S. Army
S.E.-8 (Fr.)	Weight 180 lb.	(Am.)	2nd Lieut. F. A. Johnson	U. S. Army
Flight F				
Leaning (Am.)	Weight 300 lb.	(Am.)	Lieut. (jg) P. S. Gilligan	U. S. Navy
Aviation B.V. (Fr.)	SPA 280 hp.	(Fr.)	Arthur W. Fox	Eagle Flying Corp.
Byrd (Fr.)	SPA 220 hp.	(Fr.)	Lieut. S. C. Fox	U. S. Navy
Aviation B.V. (Fr.)	SPA 300 hp.	(Fr.)	W. H. Taylor	Aero Import Co.
Leaning (Am.)	Weight 300 lb.	(Am.)	Lieut. (jg) J. F. Walker	U. S. Navy
Aviation B.V. (Fr.)	SPA 225 hp.	(Fr.)	Albert Agosta	Aero Import Co.
Monroe Reamer (Fr.)	LeRhone 120hp.	(Fr.)	Charles Galt	Monroe Reamer
Flight G				
Curzon Triplane (Am.)	Curzon Model E 420 hp.	(Am.)	Lieut. Cole W. B. Davidson	U. S. Navy
Curzon Triplane (Am.)	Curzon Model E 420 hp.	(Am.)	2nd Lieut. W. D. Colburn	U. S. Navy
Verville (Am.), Pashall 600 hp.	(Am.)	C. G. Gentry	U. S. Navy
Notes: 1. All flights were held on the 10th of May.				

First Pursuit Group Training

The course in Pursuit and Bombing, prescribed by the Chief of Air Service, has now been completed by the practice with Cooper fragments in the air. The course, which has been attended by as much as 1000 pilots, was divided into three parts: this course work, dummy bomb dropping, and dummy bomb dropping. The first part of the course was completed by June 30, 1925, as there was ample time to complete the entire course by July 1, as required, had facilities for bomb dropping been available at the time.

Many obstacles had first to be overcome, however, before a single dummy bomb could be launched. The first of these was the fact that the only dummy bombs available were not fitted with the proper means to attach them to the Cooper bomb racks provided. This obstacle was overcome by attaching the bombs to the dummy bomb which was turned up into a cage, riveted at the base, and passed for the bomb rack at the top.

After this had been accomplished, permission had to be obtained to drop some of the unladen dummy bombs over the field which contained them, though starting delay. Testing of the bombing equipment that developed, revealed two more serious obstacles. There were no bomb sights available and the target could not be seen through the wing in any event; also, no necessary could be obtained by gunning at the proper time to launch the bomb after the target had disappeared under the leading edge. Then the bombs after striking the air-bursting upon being launched, a mishap which would be very disastrous with Cooper bombs and not without danger when using loaded dummy bombs.

The first of these difficulties was overcome by cutting away the fabric of the leading section of the lower wing, making a large enough opening to look at a portion of the ground. The pilot could then sight on the leading or trailing edge of the air-bursting, according to the position of his head, the height, wind velocity, etc.

The second and more dangerous obstacle was overcome by setting the bomb rack back about five inches. This was accomplished in the following manner.

The R. E. B. airplanes are fitted for Cooper Bomb Backs by means of four hinges which to the bottom, leaving a five-inch distance between the bomb rack and the bottom of the fuselage. When striking the bomb rack in the holes resulted in having the bombs strike the undercarriage, and even it was not possible to raise the fuselage back, two pieces of aircraft steel were drilled with four holes each, and four screws were used to attach them to the hinges, and were attached to the hinges by means of the forward bolts. The rearward bolts were turned five inches from the forward bolts, so that the hinges, when attached to the steel strip, would be five inches further back than formerly.

After this new device was thoroughly tested, the practice in dummy bomb dropping was resumed. All pilots available for duty with the Segments and Group Staff completed the course, dropping eight instead of six bombs each. During this practice, a total of 120 bombs were dropped and only very few of them fell outside of the designated area of a Cooper bomb from the target.

This part of the course was completed by September 13, 1925, and it was proposed to run the Cooper bomb practice at Camp Stanley about thirty miles from Kelly Field. The first part of the course was completed by the first part of the course. As there was a field of practice trenches adjacent to the Camp Travis airfield, which would be available as a bombing range when not used by the Second Division Infantry, permission was requested from the Air Service, via the Chief, Eighth Corps Area, and the Chief of Operations, Second Division, to use this range, instead of the Camp Stanley airfield, for the purpose of the first part of the course.

It was found that five Cooper bombs could be launched in an hour without permission of the Chief of Ordnance. This permission was obtained by the Chief of Ordnance, Second Division, as that the practice was again set for the practice and practice orders drawn up. It was found that the practice was completed by the Chief of Operations, Second Division, as that the practice was again set for the practice and practice orders drawn up.

was again postponed until Tuesday, September 28, 1925, when it was finally carried out.

In fact, it would have involved considerable hazard to the instructor involved, the bomb was dropped on the ground at Kelly Field, but was transported under guard to the Camp Travis airfield. The pilots then flew their steps over to the Camp Travis airfield where their bomb racks were loaded. After the course calls for three Cooper bombs per pilot, one dummy bomb was also placed in the bomb racks so that it could be launched first for a sighting shot.

Every possible precaution against accident was observed. Only one pilot was permitted to load at a time. Careful statements as to all approaches to the range, and the bombs were cleared with detector and loaded on the racks under the supervision of an experienced officer.

It was planned to complete the work in one morning and on September 11 it was contemplated until the subject again comes up in the new tactical training course scheduled to commence on the first Monday in October. All available pilots participated, with the exception of one officer, who was First Officer of the Day, and Officer of the Guard, respectively. Only one pilot was available with the squadron and two on the Pursuit Group Staff, making eleven officers who completed the course. Thirty-three Cooper bombs and eleven loaded dummy bombs were dropped from an altitude of 500 feet. All of the sighting shot with dummy bombs were other than on shot. All of the shots of the Cooper bombs landed well within their effective distances and with respect to the target, the scoring 50 hits—about 50 per cent accuracy. According to our present schedule, this completes the Pursuit and Bombing Course and the subject again comes up in future Tactical Training Course.

Recently a new formation maneuver has been worked out and adopted by the First Pursuit Group. It is a variation of a "hook" in which the lead element is a "half leader" or "quarter leader" while the other members move outside wing over turn. This turn, of course, leaves altitude. The leader executes an "immediate," or otherwise turn, while the other members execute a "steep climb" or "steep climb" term sometimes referred to as "diamond." This turn makes a very pretty maneuver as well as a most useful one. It enables a patrol to quickly reverse direction in pursuit of an enemy without suffering a loss of altitude.

Cooperation of Airplane and Searchlight

Major W. F. Thompson writing in the Military Engineer on the cooperation of airplanes and searchlights in anti-aircraft defense, gives some general principles which are presented in substance here.

In the area to be defended there must be complete liaison between pursuit airplanes, anti-aircraft batteries and searchlights. An aircraft gun and anti-aircraft searchlight should fly at a variable height to quickly attack any enemy airplane which descends, they should fly just in rear of the searchlight to prevent the searchlight from being sighted by the enemy, and to avoid hindering the work of the searchlight personnel. The searchlight of the pursuit machines should be located behind the lighted area which is defended by them.

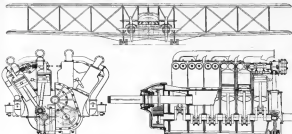
The searchlight should come in great length of time, as a concept, with making the defense effective. Any source of searchlight material after a continuous band of light has been placed across the front should be used to broaden the lighted area. The searchlight should be used to search for machines for a length of time sufficient to allow the pursuit machines to immediately attack them. The searchlight beam must not be exposed until the hostile plane is well into the lighted zone.

The belief is expressed that, in the future, in view of the economy and efficiency of the method, the principal use of searchlight cooperation with pursuit machines as defense against night bombers.

Proposed Transport Airplane

Every aviation prophet has predicted the coming of large transport airplanes in the near future but designers, in this country at least, have not taken these suggestions seriously. The machine illustrated and briefly described herewith not only

will do so. The weight is expected to be very low for the power. The arrangement of the valve gear is noteworthy. The structure is simple and the operation is supplied by one governor.



FRONT ELEVATION OF THE TRANSPORT AIRPLANE AND SECTIONAL VIEW OF THE ENGINE PROVIDED BY RAYMOND M. HAYWARD

The English Air Machinery Competition

The results of the government competition held in Manchester, Great Britain, have been published as far as the awards are concerned. The first prize of the engine has not yet been awarded. The awards are set as high as intended and in one case there was no award.

The awards are as follows:

NAME OF ENGINEER	AWARD
First Prize—W. H. P. & Co., Ltd., London	No award
Second Prize—Hawker Aircraft Co., Ltd., London	£5,000
Third Prize—Vickers-Vickers Co., Ltd., London	£1,000

NAME OF ENGINEER	AWARD
First Prize—Westland Aircraft Co., Ltd., London	£7,500
Second Prize—Hawker Aircraft Co., Ltd., London	£5,000
Third Prize—Vickers-Vickers Co., Ltd., London	£1,000

The competition did not come up to specifications in many ways. It was intended to develop machines that were far ahead of present design but many of the machines were only modifications of designs in use as aircraft at the present time. The judges have apparently considered this in making the awards.

The aeroplane competition has brought out some very interesting designs but none of them were unfortunately finished too late to participate.

To Rebuild Anasotia Hangar

The Navy Department has decided to rebuild the hangar which recently burned down at the U. S. Naval Air Station, Anasotia. It is a 100 ft. by 100 ft. hangar which destroyed most of the planes, the station has sustained operations.

Situation in Naval Aviation

A strict censorship has been clamped on the activities of naval aviators, or rather the officers on aviation duty in the Navy Department have been directed not to talk for publication on aviation matters. The orders are to the effect that the officers on aviation duty are not to be interviewed for publication on aviation matters, and that they are to be subpoenaed for approval to the Chief of Naval Operations and when approved passed through the Navy news bureau. The reason for this order, it is believed, was the publication of a dispatch by the Associated Press, which stated that the President had been told by the Chief of Naval Operations that the Navy Department had no objection to the disclosure of the information by any officer on duty to the Navy Department, but that the Chief had been of representatives with given by a statement as received from the Navy Department, that the statement was not to be made to the public, and that the statement was not to be made to the public by any officer on duty. It is considered likely, when the facts concerning these views of confidential information are checked up in the Navy Department, that the chief has been asked to afford, but when that will be not indicated at present. The Navy Department has been asked to make a statement, therefore, Navy aviation matter no far as they are concerned, and they may see the light of print only in such formal and routine statements as are to be "released." In the press, the Navy on aviation duty, therefore, may be permitted to interview for publication, but they are not to be interviewed for publication on this duty, "we cannot tell their audience."

[illegible][illegible]

—and that long before the proposal of a single Air Service can gain a foothold, if the opposition the project met on the floor of the Senate early this year is an indication of the legislative attitude toward such an enterprise.—*Army & Navy Journal*

Alongside Aviation Fuel used Export Aviation Gasoline

Artemisia abrotana, prepared by the Industrial Alcohol Co., Baltimore, Md., for trial by the Navy Department and by the latter submitted to the Bureau of Standards for test, was a mixture apparently of about 60 per cent alcohol, 22 per cent gasoline, 12 per cent kerosene, and 4 per cent other ingredients. This is not the abrotana prepared for commercial or passenger car use. The exact composition and methods of manufacture are a trade secret.

The tests made for the Navy Department concerned in a direct comparison, on a 32-cylinder Liberty engine, between design and standard "X" (export grade) aviation gasoline with respect to maximum power, allowable, and fuel economy. The tests were made at the altitude laboratory at the Bureau of Aeronautics, where controlled conditions simulate those of any altitude up to 20,000 ft. The speed range covered was from 1,800 to 1,900 revolutions per minute and the altitude range from ground level to 20,000 ft. Two test cells of comparison were used, one with standard aviation grade gasoline and one with 72-aviation, 100-oil, gasoline.

A copy of Report No. 50 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

DeHavilland Aircraft Co. Formed

Capt. Geoffrey deHavilland, the designer of the original DH-4 and formerly chief designer of the Airco, has formed the DeHavilland Aircraft Co. The present purpose of the company is to start in with the sale and maintenance of present designs and later produce machines of their own construction. The directors are Capt. deHavilland, A. S. Turner and G. C. Walker all former members of the Ace staff.

It is reported that Capt. Scharf and Mr. Walter have been working on a six-seater cantilever monoplane to be fitted with a 300 hp. engine.

The formation of this concern marks the reawakening of some of the best blood in the old Aztec, into active participation in commercial ventures. That is a hopeful sign, for the members of this new concern are intimately connected with the progress of events and would not have made such a step had they not believed that sufficient business could be found soon enough to make the firm a success.



THE HORSE 34, WINNER OF THE CORTNEY FOR 34th
MAGNIFICENT BOLD IS SOLD AT THE ANNUAL LEASING OF
HORSES

Any Mail or Fleets

The Marine Aviation Force stationed at Santo Domingo City, D. R., is developing air passenger and mail service with highly satisfactory results. Passengers are being taken from one post to another and mail is being delivered whenever a suitable moment arises. A satisfactory mail service is in effect between Santo Domingo City and Santiago. Also between Santo Domingo City and San Pedro de Macoris.

The mountains and jungle covered condition of many portions of the Island of Haiti, render mail service by air much greater than by any other means. Furthermore, the unsettled condition of portions of the interior, is a source of delay to transportation upon land. It appears that airplanes need will be the solution of the problem of delays in communication which have been experienced for a long time in Haiti.

New Speed Record!

A new world speed record over one kilometer was made November 8 at the Amundsen, near Paris, by Bernard de Boiron, with a Spad-Hispano machine, according to the New York Times. The official speed, controlled by chronometers and officials of the Aero Club, over a measured kilometer, was 369 kilometers, 123 meters per hour (about 193 miles), the distance being covered in 11.65-100 seconds.

This record beats the one made by Steve Lawrence on Oct. 20, when he passed the 300 inhalator per hour mark for the first time.

During one of his journeys over a measured distance which was modifiedly tested the Norquest boat has official record by a 1000 ft. speed was timed at 11.1-5 seconds, giving a kilometre, 428 metres per hour.

When the record was made there was a crash which de Bonnet declared affirmed success. "Since he flew in the Graham Bennett racing machine and now sits entirely hidden in my lateral vision."

Bombing Tests on the Indians

The bioassay experiments using the old 1000-gallon tank were designed to determine the effect on the vessel of areas under water near the vessel have been a factor which had been placed at a carefully under water from the hull of the vessel was produced the expected damage to the vessel completion of the under water experiments vessel was taken into about water. The 1000-gallon tank was dropped from the air.

Further experiments to determine the flame speed from benzene exploded on the ship.

Tasman Island Bus Airplane

According to the New York World, which blind, Va. are awaking to the requirements have just purchased five fast airplanes from the Marine Air Transportation and Development of no easy plane by a common student and even extraordinary when it is used as an automobile and a carrier.



MAJOR R. W. SCHROEDER WHO HAS BEEN HONORABLY
DISCHARGED FROM THE ARMY AND IS NOW WITH THE
REPUBLIC FLOWERS OF CHICAGO

[illegible]

The officer also was sued commercially. In the proceedings, he not tolerate taxpayer interference in their affairs was conducted a short time ago when a moving picture operator was driven away and his machine smashed when he refused to take pictures. The operator's visit followed the Wales-wide publicity of the shooting of a seventeen-year-old boy by the island constable for violation of a Sunday ordinance.

Regular Air Service to Big Bear Lake

The *Fly Leaf*, Oct. 9, is authority for the following report of a commercial enterprise soon to be put into operation in Southern California:

Preparations for a regular aerial service to Rose Valley, to be operated both summer and winter, are being made by the Bushed Aviation Company, under the direction of D. D. Frazee, according to George D. Harrice, Secretary of the Aero Club of Southern California.

The tentative plans call for the use of Standard planes equipped with Hall-Scott L-6 motors. A landing field will be used at Ontario as a turning point between Los Angeles and the valley.

For winter surveys, when Big Bear Lake is covered with ice and snow, it is said that planes are to be equipped with snow shoes, similar to those commonly used on skis.

Quarantine Regulations for Aircraft

The U. S. Public Health Service has issued the amended regulations against flying between the United States and any foreign port.

The provision relating to bills of health is as follows: "Masters of vessels or aircraft starting from or coming to any foreign port or any port in the possessions or other dependencies of the United States for a port in the United States or its possessions or other dependencies must obtain a bill of health, in duplicate, signed by the proper officer or officers of the United States at the port of departure, in conformity with the law, except in case provided for in paragraph 3."

Exemptions are made in the case of aircraft flying between Canadian ports on the St. Croix River, the St. Lawrence River, the St. Lawrence River, the Detroit River, the St. Clair River and the St. Mary's River and adjacent ports of the United States on the same waters; also aircraft flying between Canadian ports on the following lakes: Ontario, Erie, St. Clair, Huron, Superior, Bay of Quinte, Lake of the Woods, Lake Champlain and parts of the United States; also aircraft flying between British Columbia and ports on the Pacific coast; also aircraft flying between Canadian ports on the Atlantic Coast and ports of the United States on the Atlantic Coast as far south (inclusive) as Boston; also aircraft flying between Mexican ports on the Rio Grande River and a line of the United States on the same river.

"3. The form of certificate which shall be issued to a vessel or aircraft when released from quarantine shall be prescribed by the Surgeon General of the Public Health Service, and shall contain the statement that the vessel or aircraft has in all respects complied with the quarantine regulations prescribed by the Secretary of the Treasury, and that in the opinion of the quarantine officer it will not convey communicable disease, and that such vessel or aircraft is granted free or provisional passage to enter her port of destination, the name of which is to be included in the blank."

The pilots of aircraft must obtain a bill of health from the American Consulate, and upon arrival at a port of the United States, he is required to obtain clearance paper from the quarantine officer.

Detroit to Have Second Airport

The city of Detroit, determined to maintain its lead as a progressive aeronautical center, intends establishing its second municipal landing field. At the request of the commanding officer of Edgewood Field, Captain N. J. Fouts, flew over the proposed site and after making an additional ground inspection will recommend its establishment at the west end of the city island.

The field will only permit one way landings to be made, but in the event of a strong south wind the other municipal field, located several miles away, will be available. The new field is situated along the Detroit river, very close to the heart of the city, and its water frontage makes it possibly adaptable for use by seaplanes.

The commanding officer has conferred with the officials of the city of Detroit relative to the financing of an aeronautics governing flying over that city. The opinion of the chief of air service in this matter were given and the city authorities agreed that legislation governing aerial traffic should be enacted by the federal government in order that such regulations will be universal throughout the country. They realize that haphazard legislation by separate municipalities will only result in a confusing jangle of laws.

La Crosse to Have Hangar

The city of La Crosse, Wis., will not be required to build an elaborate and expensive hangar to house and service on its flying field, according to information received here by the aerial road service authorities. Postmaster G. B. Haas has been notified that a long shed, with facilities for taking care of two or three airplanes, will meet the demands of the post-office department.

La Crosse is the only city the post office makes between the Twin cities and Chicago.

Stent Bat-Wing Tested

The first "bat-wing" monoplane, designed and built in Detroit by William B. Stout and intended for use as a first-passenger aerial locomotive, underwent its first test at Ford's field recently. Bert Anson, the noted pilot, who had been brought on from the east in the morning to make the test, entered the door of the new monoplane "baptism" soon after 9 o'clock. His instructions were to "hang" around the field to see if the "bat-wing" would survive on her own power—something she had never been asked to do before.

Anson started off and landed straight ahead for 50 feet. Then, ignoring his instructions not to leave the ground, he soared straight into the air away across the country, out of sight and in half space, while Mr. Stout and his friends watching the test trembled for his own safety. After a return to the ground in a 20-minute flight in which the monoplane showed all the qualities that had been claimed for her.

"Never is all my experience," said Mr. Stout after Anson had landed. "There I was on an aerial performance like this. The fact that she was able to take the air on her first time out, without preliminary ground trials, is remarkable and worthy as much as aerial transportation."

The Stout bi-wing is the new type of all-wooded, naturally braced monoplane, which is expected to displace the military type developed during the war. It is equipped with a Ford 200 horsepower surplus engine.

It is said that later types of the bat-wing will be perfected so that they will give from 10 to 12 miles on a single gallon of gasoline, or about the same as an eight-cylinder automobile now.

Minnesota Air Squadron to Build Plane

A complete airplane will be constructed by the engineering class of the Minnesota observation squadron during the coming winter months, according to an announcement made by Lieut. Col. W. C. Davis, in the office of W. F. Rhoads, adjutant general.

The engineering class comprises 30 men and will be under command of Lieut. D. L. Newbold, St. Paul. Classes will open November 1 evening at the Curtiss airplane field, St. Paul.

All material will be furnished by the Curtiss Northwest Airplane company, and when the machine is completed it will be given to that company.

This, according to Colonel Davis, is the first attempt of any department, either by national or state guards, to build an airplane. It is expected to have the machine completed in time for spring flying.

Air Service Units of R.O.T.C.

The Chief of Air Service has been authorized to take the necessary preliminary steps with a view to sponsoring by Air Service units of the R.O.T.C. at selected colleges during the calendar year 1920-21. A table of equipment in the field and heavier-than-air units will shortly be published. A minimum enrollment of 100 students will be required and instructor of students now enrolled in aviation units of the institutions selected will be permitted both for the basic course and students in the first year of the advanced course with the consent of the student and the approval of the institution at such institution, without entering the service such below the minimum enrollment required for that institution.

Course for New Air Officers

The officers appointed in the Army Air Service include a large number of pilots of varying experience and flying qualifications. Commanding officers have been directed to carefully examine these qualifications, experience and ability, and to determine whether the necessary training can be given to qualify the officers for the duty he should perform. It is the opinion of a commanding officer a reasonable number of flights with an experienced pilot will bring the new pilot back to proper flying form, the latter will be given such a course but if a "pilot" course is advisable, the new officer will be sent to pilot school for the complete course.

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Chief of Italian Army Air Service

Major General Roberto De Sibert is the new chief of the Italian Army Air Service. Since July, 1935, all the Aerial Services have been taken up by the War Department, so



MAJ. GEN. ROBERTO DE SIBERT

that General De Sibert not only directs the Military Aviation but also the Commercial Aviation.

General De Sibert is one of the youngest and most clever officers of the Italian Army. During the war he was at the Italian Front, in the Engineer Corps. Since the Armistice he organized the Army Air Service and now he plays a most important part in the Italian aeronautics.

Typhoon at Fort Mills, P. I.

The most serious typhoon in the history of the Philippines for fifteen years passed over Fort Mills on the afternoon of October 23. From all indications and look of all workings it must have fared quickly and the damage to several organizations was enormous. The walls of the buildings in the artillery garrison which have withstood typhoons for many seasons were blown away like chaff; trees were uprooted and stripped of branches and leaves; trucks and other motor vehicles were jacked up and removed from roads to embankments and driven in the vicinity; a most soldier on outpost duty was blown off of a one-hundred foot cliff into the bay where he was given up as lost, but at all risk the post increasing he was present and saw the worst for his experience, barges and lighters loaded with Quartermaster and Air Service supplies were blown a distance of fifteen miles and jacked up on the shore of the bay.

The most damage of all was insured by the Air Service

on the "Tadad the Island" where the new size is being established and under construction. It was here that the 13th and 7th Battalion Companies were quartered in tents that happened to be directly in the path of the storm. Within half an hour after the storm broke, there was no more, the tents being ripped to shreds. The Air Service post exchange was destroyed, and pieces of it scattered over an area of five hundred yards. One man who happened to be in the building at the time suffered a broken leg and minor injuries.

The store had no hazardous side as well as its destruction, as is shown by the fact that when the balloon pumps were demolished, the cock-shock and combustion store were, next along, thus the chances for these and the store included were nil. When the post exchange went down there was a wild scramble among the boys to save for themselves some of the stock, and instead of getting at the stock inside, they, who do that would have stood them in good stead and a full taken could be acquired, nothing but soap, chewing gum, candy, playing-cards, fountain pens and the cash register was saved.

Luckily no damage to airplanes or airplane equipment was sustained that would impair operations.

Aviators' Dinner at Hotel Astor

The Aviators' Dinner held at the Hotel Astor on Amsterdam night was a great success. The dinner assembly was most successful in its presentation for the guests. Chas. W. Kervod was chairman and Cole J. Yantger was treasurer. Others on the committee were Eddie Robinson, Jr., James B. Taylor, Jr., Condit A. C. Bond, Effort Sprague, Charles Glendon Turner, Harold E. Hartney, F. H. La Guardia, Morris J. Connelly, Dr. S. G. Hunt, Chas. J. Bidde, Douglas Campbell and Sumner Sewell.

There was no speaking by guests but there was a program underlined by many of these present. The *Evening Post* account of the dinner is so vividly written that it is worthy of reproduction.

Food was a mere incident at the dinner of 800 aviators, former Army and Navy service pilots, who celebrated Armistice Day in their own way at the Hotel Astor. Food was brought and taken away and doubtless some people ate it, but there was more action between us here. There was no formal speaking, no one got up to tell after dinner stories while listeners dropped under the wrong influence of this coffee. There was none of this sort of thing going on. It was rather quiet, serious and life.

"There was no formal 'see how with us tonight.'" They wasn't even a speaker's table as a rule. That sort of stuff had been tried on previous before and it hadn't worked.

The evening, which was extremely a large one, took off in the lobby where (fringe guests) making up and down made dancing and shouting the event of the night.

"I don't have to fly over Germany. I am a French man!" They had the dining room floor spread every one of us there at least 1,000 feet, with the throttle wide open and gaining altitude every minute. Famous old airplanes which were able to get together in part for the evening, now grouped together. There was the Blenheim, a reproduction of the Lafayette Escadrille, the Two Hundred and Thirtieth, the Twenty-seventh, and the famous First Squadron, A. S. F., a table for Americans in the Royal Air Force and the presence of war, pilots in the uniforms of the Royal Flying Corps, the Belgian Air Service and the French First Corps mingled with the men of the American Air Service.

By a collaboration which every one considered curious, a pair of legs and one hand in one corner of the table, with the First and Two up, making the shaven head. Every one concluded that the room had been decorated by persons of taste and discrimination, and a knowledge of the ways of the airplane room.

There was a dinner.

The dinner passed off very nicely. That is to say, without a word and out with food, which no one took very seriously. Every one spent their time talking to table, talking, talking, and that talkies who had been the best talkies in the world were the best talkies, that moment of that time they were J. W. O. L. to Paris and got back without having the O. O. set out, were still warm. It was a time of times.

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